

Applicant: Cuong Nguyen, et al.
Filed: December 18, 2003
Application No. 10/707,496

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Original) A method for supplying power to a load using multiple power sources, comprising:
 providing power comprising a first value of a parameter from a first power source to the load; monitoring the first value;
 providing power comprising a second value of the parameter from a second power source to the load,
 wherein the second value comprises substantially the first value when the first value is within a range of values for the parameter and is within the range when the first value is outside the range;
 disconnecting the first power source from the load when the first value is not within the range; and
 reconnecting the first power source to the load when the first value is within the range and while the second power source continues to provide power to the load.
2. (Original) The method of claim 1, wherein the parameter comprises frequency.
3. (Original) The method of claim 2, wherein the parameter comprises frequency and the first value comprises substantially 50 Hertz.
4. (Original) The method of claim 2, wherein the parameter comprises frequency and the first value comprises substantially 60 Hertz.
5. (Original) The method of claim 1, wherein the parameter is voltage.

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6. (Original) The method of claim 1, wherein the parameter comprises phase.
7. (Original) The method of claim 1, further comprising storing the first value of the parameter.
8. (Original) The method of claim 7, wherein the step of storing the first value comprises storing the first value that comprises a last monitored first value that is within the range for the parameter.
9. (Canceled)
10. (Original) The method of claim 9, further comprising the step of drifting the second value of the parameter to a fundamental value.
11. (Original) The method of claim 1, wherein providing power from a first power source to the load comprises providing power from a grid power source.
12. (Original) The method of claim 1, wherein providing power from a first power source to the load comprises providing power from one or more generators.
13. (Original) The method of claim 1, wherein the step of providing power from a second power source to the load comprises providing power from one or more generators.
14. (Original) The method of claim 13, wherein the step of providing power from one or more generators comprises providing power from one or more microturbines.
15. (Original) The method of claim 1, wherein the step of providing power from a second power source to the load comprises providing power from a grid power source.

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16. (Canceled)

17. (Canceled)

18. (Original) The method of claim 1, wherein reconnecting the first power source to the load comprises drifting the second value of the parameter of the second power source towards the first value of the first power source when the first value becomes within the range while the second power source continues to provide power to the load and reconnecting the first power source to the load when the first value and the second value are substantially the same.

19. (Canceled)

20. (Canceled)

21. (Canceled)

22. (Canceled)

23. (Canceled)

24. (Canceled)

25. (Canceled)

26. (Canceled)

27. (Canceled)

28. (Currently Amended) A power distribution system, comprising:

a load;

a grid power source connected to the load which provides power having a grid frequency;

a generator connected to the load which provides power having a generator frequency;

a controller connected to the generator ~~The system of claim 24~~, wherein the controller

comprises a default frequency generator which provides the generator with a default frequency to provide power when disconnected from the grid power source, wherein the controller is operative to provide the generator frequency to the generator and is operative to drift the generator frequency to the grid frequency; and

a sensor connected to the grid power source and to the controller that measures a grid operating condition, wherein the grid operating condition comprises the grid frequency.

29. (Currently Amended) A power distribution system, comprising:

a load;

a grid power source connected to the load which provides power having a grid frequency;

a generator connected to the load which provides power having a generator frequency;

a controller connected to the generator ~~The system of claim 24~~, wherein the controller

comprises a grid period stretcher that attempts to alter the generator frequency to detect islanding conditions, wherein the controller is operative to provide the generator frequency to the generator and is operative to drift the generator frequency to the grid frequency; and

a sensor connected to the grid power source and to the controller that measures a grid operating condition, wherein the grid operating condition comprises the grid frequency.

30. (Canceled)

31. (Original) A method for detecting whether a potential power source is still providing power to a load, comprising:

providing power having a first frequency from a first power source to the load;
providing power having a second frequency from a second power source to the load
wherein the second frequency is substantially the same as the first frequency;
attempting to drift the second frequency of the power from the second power source away
from the first frequency of the power from the first power source;
monitoring the second frequency of the power provided by the second power source; and
evaluating whether the first power source is providing power to the load.

32. (Original) The method of claim 31, wherein providing power from a first power source
comprises providing power from a utility grid.

33. (Original) The method of claim 31, wherein providing power from a second power source
comprises providing power from one or more generators.

34. (Original) The method of claim 31 wherein attempting to drift the second frequency of the
second power source away from the first frequency comprises attempting to lower the second
frequency.

35. (Original) The method of claim 31, wherein attempting to drift the second frequency of the
second power source away from the first frequency comprises attempting to raise the second
frequency.

36. (Original) The method of claim 31, wherein evaluating whether the first power source is still
providing power to the load comprises determining that the first power source is no longer
providing power if the second frequency drifts away from the first frequency.

37. (New) The system of claim 28, wherein the controller comprises:

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a mode switch logic device that is operative to disconnect and reconnect a power source based on input from range detectors;

a frequency range detector that is connected to the mode switch logic device and which determines if the grid frequency is within a range of values; and

a frequency adjust loop that is operative to drift the generator frequency to the grid frequency.

38. (New) The system of claim 29, wherein the controller comprises:

a mode switch logic device that is operative to disconnect and reconnect a power source based on input from range detectors;

a frequency range detector that is connected to the mode switch logic device and which determines if the grid frequency is within a range of values; and

a frequency adjust loop that is operative to drift the generator frequency to the grid frequency.

39. (New) A power distribution system, comprising:

a load;

a grid power source connected to the load which provides power having a grid frequency;

a generator connected to the load which provides power having a generator frequency;

a controller connected to the generator, wherein the controller comprises a default frequency generator which provides the generator with a default frequency to provide power when disconnected from the grid power source, wherein the controller is operative to provide the generator frequency to the generator and is operative to drift the generator frequency to the grid frequency; and

a sensor connected to the grid power source and to the controller that measures a grid operating condition, wherein the grid operating condition comprises a voltage of the grid power source.

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40. (New) The system of claim 39, wherein the controller is further operative to disconnect the grid power source from the load if a voltage of the grid power source is outside a range of values.

41. (New) The system of claim 39, wherein the controller comprises a voltage range detector that is connected to a mode switch logic device, wherein the voltage range detector determines if the voltage is outside a range of values.